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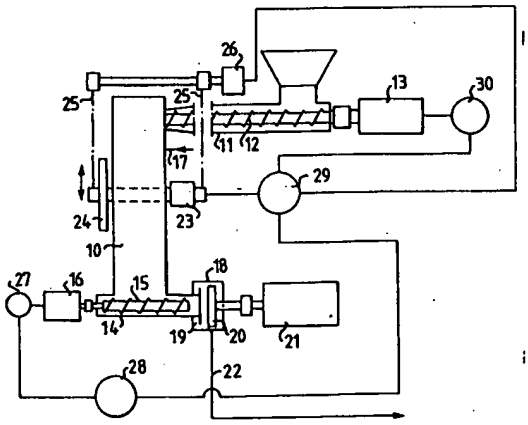
(54) Method of producing fiber pulp.

(57) A method of producing fiber pulp from lignocellulose-containing fiber material, where the fiber material first is fed into a preheater (10) and preheated and the preheated material thereafter is discharged to a refiner (18) where the fiber pulp is produced by defibration of the fiber material. The fiber material is held in the preheater (10) for a predetermined dwell time, irrespective of the fiber pulp production, by measuring the fiber pulp production and using it for controlling the level of the fiber material in the preheater (10).



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This invention relates to a method of producing fiber pulp from lignocellulose-containing fiber material.

The fiber material, which normally consists of vegetable or wood parts, for example in the form of chips, first is fed into a preheater having the form of a container, in which the material is preheated by a heat medium, such as steam of atmospheric or higher pressure. The material is discharged from the preheater to a refiner where the fiber pulp is produced by defibering the fiber material. The defibration normally takes place in a refiner comprising two opposed refiner discs rotatable relative to each other, which between themselves form a refining gap. The material is fed to the inner portion of the refining gap and defibered while being passed through the gap.

The preheating of the fiber material has the object to soften the material in order thereby to facilitate the subsequent defibering and to affect the properties of the fiber pulp as well as the energy consumption. A change in the preheating time, i.e. the dwell time in the preheater, changes the quality of the defibered pulp. It is normal in a defibering plant, that for various reasons the production is subjected to momentary variations. When at these production variations the level of the fiber material in the preheater is maintained, the dwell time of the material will be changed so that the fiber quality varies with the production variations.

In conventional plants the preheaters are provided with equipment rendering it possible only to maintain the material level in the preheaters constant.

The present invention offers a solution of the aforesaid problem. According to the invention, the fiber material can be held in the preheater for a predetermined dwell time, irrespective of the fiber pulp production, by measuring the fiber pulp production and using it for controlling the level of the fiber material in the preheater.

The invention is described in greater detail in the following, with reference to the accompanying Figure showing an embodiment of a plant for the production of fiber pulp according to the method of the invention.

The plant comprises a preheater 10,to the upper portion of which a feed device 11 with a feed screw 12 for fiber material, preferably wood chips, is connected. The feed screw 12 is driven by a motor 13 with adjustable speed. At the bottom of the preheater 10 a discharge device 14 is located which comprises one or several discharge screws 15 driven by a motor 16 with adjustable speed. Steam for heating the material in the preheater 10 is supplied through a conduit 17.

The discharge device 14 is connected to a refiner 18 comprising a stationary and a rotatable refiner disc 19,20, of which the rotatable refiner disc 20 is driven by a motor 21. The fiber pulp defibered in the refiner is removed through a blow line 22 to subsequent processing steps.

For determining the material level in the preheater 10, a level indicator 23 is located on the outside of the preheater and runs in a guide 24 along the preheater. The indicator 23 can be moved along the guide 24, for example by means of a chain arrangement 25 and a stepping motor 26.

According to the embodiment shown, the speed of the discharge screw 15 is a measure of the actual production of fiber pulp. A certain speed, thus, corresponds to a certain fiber pulp production, calculated as ton pulp per hour (ton/h). The relation, however, need not be linear.

By considering the shape of the preheater, i.e. the variation in height of the cross-sectional area, the volume (m^3) of the fiber material contained in the preheater can be determined as a function of the level (m) of the material column in the preheater. When consideration also is paid to the density of the raw material in question, this function can be expressed as ton/m.

By dividing the fiber production expressed in ton/h through the material contained in the preheater expressed in ton/m, and multiplying this quotient by the desired dwell time T expressed in hours (h), the level (H) expressed in meters (m) of the material column is obtained. It corresponds to the desired dwell time T at the actual production.

At production variations, i.e. changes in speed of the discharge screw 15, the desired level (H) will vary according to above. The level can be controlled by adjusting the material supply to the preheater 10,preferably by varying the speed of the feed screw 12.

The control circuit shown in the Figure comprises a revolution counter 27,which indicates the speed of the discharge screw 15 and is connected to a controller 28, which on the basis of given data comprising the desired dwell time T automatically calculates the required material level (H) in the preheater 10.This nominal value for the level is compared in a device 29 to the actual height position of the level indicator (23)(actual value). At a difference between nominal and actual value, a signal is transmitted to the stepping motor 26 for moving the level indicator 23, and a signal is transmitted to a speed controller 30 for changing the speed of the feed screw 12. By increasing or reducing this speed, the material level can be raised or lowered until the actual nominal value for the level is obtained.

The invention, of course, is not restricted to the embodiment described, but can be varied within the scope of the invention idea.

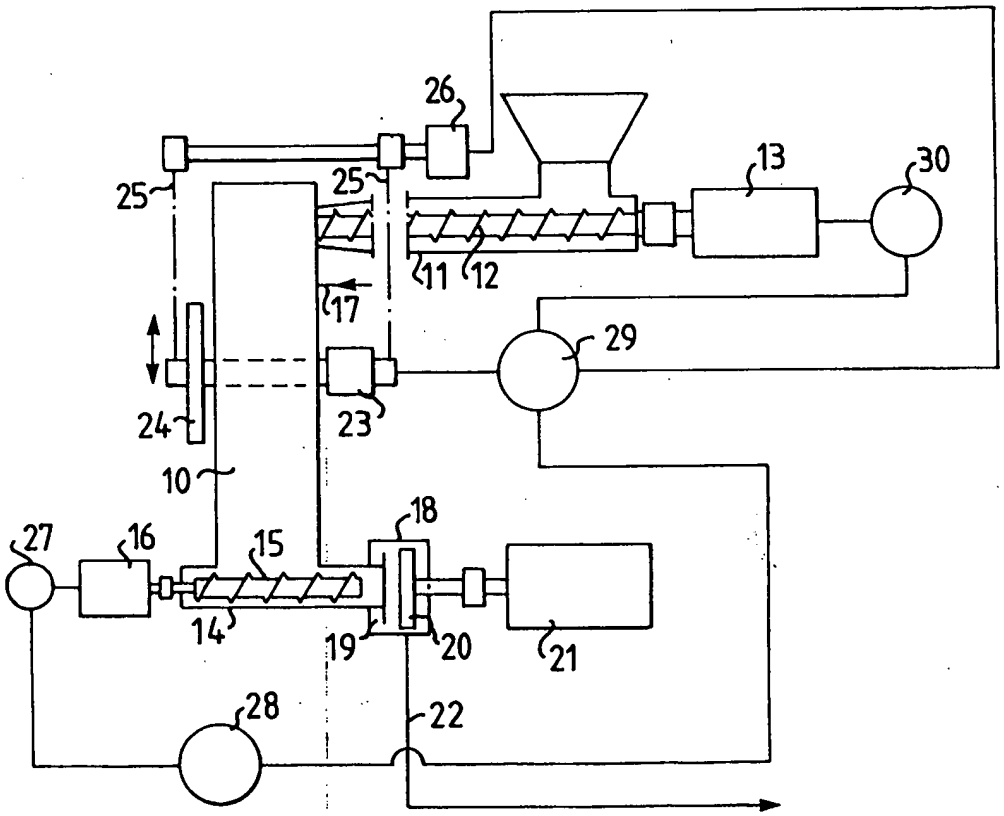
Claims

1. A method of producing fiber pulp from lignocellulose-containing fiber material, where the fiber material first is fed into a preheater (10) und preheated, and the preheated material thereafter is discharged to a refiner (18) where the fiber pulp is produced by defibration of the fiber material, **characterized in** that the fiber material is held in the preheater (10) for a predetermined dwell time, irrespective of the fiber pulp production, by measuring the fiber pulp production and using it for controlling the level of the fiber material in the preheater (10).

2. A method as defined in claim 1,**characterized in** that the discharge from the preheater (10) to the refiner (18) takes place by means of a discharge screw (15), the speed of which is a measure of the fiber pulp production.

3. A method as defined in claim 1 or 2, **characterized in** that the fiber material is fed into the preheater (10) by means of a feed screw (12), the speed of which controls the supply of fiber material and thereby the level of the fiber material in the preheater (10).

4. A method as defined in any one of the preceding claims, **characterized in** that the level of the fiber material in the preheater (10) is indicated by a level indicator (23), which is moved by means of a stepping motor (26).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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
A	US-A-4 283 252 (ROLF B. REINHALL) * column 3, line 24 - line 33; figure 1 *	1-4	D21B1/12
A	US-A-4 421 595 (ERKKI HUUSARI) * column 3, line 34 - line 58; figure *	1-4	

TECHNICAL FIELDS SEARCHED (Int.Cl.5)

D21B
D21C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
STOCKHOLM	26 April 1994	WIVA ASPLUND

CATEGORY OF CITED DOCUMENTS

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